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US PAT NO: 4,084,819 [IMAGE AVAILABLE]
TITLE: Golf club shaft for irons

L4: 1 of 2

ABSTRACT:

A composite golf shaft for use with a metal golf club head is improved by reinforcing the tubular **metal** **core** of the shaft with a unidirectional graphite fiber reinforced resin body which is inserted in the tip section of the shaft.

US PAT NO: 4,082,277 [IMAGE AVAILABLE]
TITLE: Golf club shaft

L4: 2 of 2

ABSTRACT:

A novel golf shaft having a **metal** **core** and a graphite fiber reinforced sheath thereon is provided. The shaft has a predetermined orientation of the graphite fibers. In one embodiment, some longitudinal fibers are located in the region where the butt section of the shaft begins to taper downwardly thereby lowering the bending profile of the shaft compared with a shaft not having the longitudinal fibers. The method of fabricating the shaft also is disclosed.

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US PAT NO: 5,342,283 [IMAGE AVAILABLE]
TITLE: Endocurietherapy

L7: 1 of 26

ABSTRACT:

To provide versatile radioactive implants and methods of radiation therapy, plating methods such sputtering, as are used to coat single elements such as microspheres, wires and ribbons with radioactive metals, protective layers and identification layers. The resulting solid, radioactive, multilayered seamless elements are implanted individually or combined in intercavity applicators, with fabrics and in ribbons. Because they have selected half-lives and intensities, they provide flexibility in treatment, permitting low intensity or high intensity treatment, using temporary or permanent implants and implants with high intensity or low intensity or contoured intensity to permit different therapies.

US PAT NO: 5,326,137 [IMAGE AVAILABLE]
TITLE: Gas riser apparatus and method

L7: 2 of 26

ABSTRACT:

An improved gas riser comprises a pipe nipple, casing, adaptor sleeve, tube, and stiffener. The adaptor sleeve features an internal stop which accurately positions an end of the plastic tube before the tube is plastically deformed into grooves in an internal surface of the adaptor sleeve. Each of the first and second ends of the adaptor sleeve can be manufactured in different diameters to fit pipe nipples and casings that are required by different code regulations. The method of assembling the gas riser comprises inserting a first end of the adaptor sleeve into a second end of a pipe nipple, inserting a second end of the adaptor sleeve into a first end of the casing, welding the second end of the pipe nipple and the first end of the casing to the adaptor sleeve, inserting a stiffener into a tube end, inserting the tube end into the adaptor sleeve, pulling a mandrel through the **assembly** which plastically deforms the stiffener and forms a seal by urging the tube into grooves on an interior surface of the adaptor sleeve.

US PAT NO: 5,321,221 [IMAGE AVAILABLE]
TITLE: Self-disconnecting circuit-breaker for medium tension, and use thereof in a medium-tension station or bay

L7: 3 of 26

ABSTRACT:

A multipolar isolating circuit-breaker comprising, for each pole, an insulating feedthrough containing a vacuum bottle, the feedthrough including a first contact at a first end connected to a first terminal of the bottle and designed to co-operate with a first conductor, and a second contact at a second end connected to a second terminal of the bottle and designed to co-operate with a second conductor, the feedthroughs being secured to a common metal bar sheltering a common shaft for driving the bottles and actuated by a mechanism contained in a box. The circuit-breaker is applicable to medium-tension bays and stations.

US PAT NO: 5,178,530 [IMAGE AVAILABLE]
TITLE: Gas heating device, with a catalytic burner and regulating member

L7: 4 of 26

ABSTRACT:

A heating device with a catalytic burner for a fuel gas is equipped with a member for regulating the thermal power. The regulating member includes a metal flap for regulating the flow of the mixture to be burned in the catalytic burner. This flap, for example a heat-sensitive bimetallic strip, can move between two positions, namely a first position in which the mixture to be burned is stored in the device or discharged in the manner of a leakage through an orifice in a wall of the heating device, and a second position which allows a maximum flow rate of the mixture to pass through the catalytic burner. The invention applies to all types of heating devices with a catalytic burner.

US PAT NO: 5,072,647 [IMAGE AVAILABLE] L7: 5 of 26
TITLE: High-pressure having plasma flow transverse to plasma discharge particularly for projectile acceleration

ABSTRACT:
A projectile is accelerated through a gun barrel in response to high pressure gas applied to the rear of the projectile in response to a high pressure plasma discharge. Plasma from the discharge flows transversely of the discharge into a chamber through multiple openings in a passage wall that confines the discharge. The high pressure, high temperature plasma flowing into the chamber causes an exothermic reaction of water and metal particles in a slurry in the chamber to produce high pressure hydrogen gas that flows longitudinally of the discharge against the rear of the projectile. To maintain the pressure of hydrogen gas acting against the projectile relatively constant as the projectile is accelerated down the barrel, electric power applied to the discharge increases substantially linearly as a function of time.

US PAT NO: 5,015,609 [IMAGE AVAILABLE] L7: 6 of 26
TITLE: Ceramic composite structures having intrinsically fitted encasement members thereon and methods of making the same

ABSTRACT:
A method is provided of producing a self-supporting ceramic composite structure having one or more encasement members, such as an encasing steel sleeve, joined to it by growth of the ceramic material to engagement surface(s) of the encasement member(s). A parent metal is contacted with a body of filler which is encased by the encasement member(s). The resulting ****assembly**** is heated to melt and oxidize the parent metal, e.g., aluminum, to form a polycrystalline material comprising an oxidation reaction product which grows through the body of filler and stops at the engagement surface(s) of the encasement member(s) which thereby determines the surface geometry of the grown ceramic matrix. Upon cooling, the encasement member(s) is shrink-fitted about the ceramic composite body. The invention also provides the resultant articles, for example, a ceramic composite body having a stainless steel member affixed thereto.

US PAT NO: 4,967,786 [IMAGE AVAILABLE] L7: 7 of 26
TITLE: Armature for a solenoid operated valve

ABSTRACT:
A single, rectangular piece of sheet metal is rolled to form a tube having a split seam. A cylindrical piece of rubber is inserted in the cylinder with the ends of the rubber cylinder flush with the ends of the ****metal**** ****tube****. The cylinder is squeezed or crimped to close the ends

of the piece of sheet metal at the seam and cause the **metal** **tube** to grip the rubber, thereby forming an armature.

US PAT NO: 4,822,759 [IMAGE AVAILABLE]

L7: 8 of 26

TITLE: Ceramic composite structures having intrinsically fitted encasement members thereon & methods of making the same

ABSTRACT:

A method is provided of producing a self-supporting ceramic composite structure having one or more encasement members, such as an encasing steel sleeve, joined to it by growth of the ceramic material to engagement surface(s) of the encasement member(s). A parent metal is contacted with a body of filler which is encased by the encasement member(s). The resulting **assembly** is heated to melt and oxidize the parent metal, e.g., aluminum, to form a polycrystalline material comprising an oxidation reaction product which grows through the body of filler and stops at the engagement surface(s) of the encasement member(s) which thereby determines the surface geometry of the grown ceramic matrix. Upon cooling, the encasement member(s) is shrink-fitted about the ceramic composite body. The invention also provides the resultant articles, for example, a ceramic composite body having a stainless steel member affixed thereto.

US PAT NO: 4,793,638 [IMAGE AVAILABLE]

L7: 9 of 26

TITLE: Plastic pipe to metal pipe fitting

ABSTRACT:

An interconnection between a plastic pipe and a larger diameter metal pipe having a first retainer ring received onto an end of the plastic pipe, a compressible bushing on the plastic pipe in contact with the first retainer ring, a second retainer ring, a pliant cylindrical seal in contact with the second retainer ring, a washer, an insert tube within the plastic pipe having an enlarged end contacting the washer, the metal pipe being deformed to clampingly engage and distend the pliant cylindrical seal.

US PAT NO: 4,764,114 [IMAGE AVAILABLE]

L7: 10 of 26

TITLE: Analysis system

ABSTRACT:

Periodontal analysis apparatus includes a probe member having a tip, a probe housing having a guide channel in which the probe member is disposed for reciprocating movement with the tip of the probe member extending from the channel, force applying means for reciprocating the probe member in the housing, and transducer means in the housing for monitoring motion of the probe member and sensing perturbations in probe motion caused by the CEJ and providing output signals indicative thereof.

US PAT NO: 4,743,943 [IMAGE AVAILABLE]

L7: 11 of 26

TITLE: Renewable fuser wick

ABSTRACT:

An electrophotographic reproduction device includes a pressure roll fuser whereat toner carried by a sheet of paper is fused onto the paper's surface by the application of both heat and pressure as the sheet passes through a pressure fusing nip. The pressure nip is formed by pressure engagement of a heated fusing roll to an unheated backup roll. A multilayer cloth wick rubs against a portion of the hot roll's toner

engaging surface, and thereby supplies release oil to this surface. When the wick's outer cloth layer becomes contaminated with toner and the like, the operator activates a manually releasable stitch which is associated with the wick's multiple layers. This action allows manual **removal** of the wick's top contaminated layer, thereby exposing a clean cloth surface for subsequent engagement to the hot roll's toner engaging surface.

US PAT NO: 4,667,958 [IMAGE AVAILABLE]
TITLE: Nightstick

L7: 12 of 26

ABSTRACT:

A nightstick comprising an **elongated** cylindrical main body portion and a generally cylindrical handle portion which is integral with the main body portion and extends at a right angle to the central longitudinal axis of the main body portion. The handle portion is spaced from both ends of the main body portion and is substantially closer to one of the ends. The invention includes a nightstick in which the handle and main body portions are molded as a single integral unit of thermoplastic polycarbonate material. The invention also includes a nightstick as described above which consists of a T-shaped metallic core embedded in thermoplastic material and the method of making same. Another variation of the invention includes a nightstick in which the main body portion is covered by an outer layer of elastomeric material. Still another variation of the invention includes a nightstick in which the main body portion and the handle portion each consist of a **metal** **tube** filled with elastomeric material.

US PAT NO: 4,577,339 [IMAGE AVAILABLE]
TITLE: Cable termination for x-ray tubes

L7: 13 of 26

ABSTRACT:

A cable termination is disclosed for high voltage electrical cables for x-ray tubes having inner and outer conductive housings separated by resilient insulating material. The inner conductive housing is at or near the high voltage potential and is adapted to provide even voltage distribution in the insulating material. Electrical contacts are contained within the inner housing which make connection from the cable conductors to feedthrough conductors to complete the electrical path across the vacuum envelope of the x-ray tube.

US PAT NO: 4,559,688 [IMAGE AVAILABLE]
TITLE: Bonding EPDM gaskets to filled nylon heat exchanger parts

L7: 14 of 26

ABSTRACT:

Dicumyl peroxide-dimaleimide cured EPDM elastomers can be molded to molded nylon articles so that the EPDM strongly adheres to the nylon. This practice is particularly useful in molding EPDM gaskets to nylon heat exchanger tanks.

US PAT NO: 4,493,256 [IMAGE AVAILABLE]
TITLE: Voltage applicator for limiting charge distribution in ESA printing equipment

L7: 15 of 26

ABSTRACT:

Several embodiments of a voltage applicator device are disclosed for contacting an impression roller in an electrostatically assisted (ESA) printing machine. The voltage applicator device has rolling conductive

surfaces which are spaced apart and selectively connected to a voltage source to limit voltage application to the width of one or more partial webs being run through the machine. In the various embodiments, the conductive surfaces outside the web area can be left unconnected, but are preferably grounded or connected to a voltage of opposite polarity, to drain current from portions of the impression roller lying beyond the web. The rolling conductive surfaces can be formed as individual rollers or preferably as a segmented voltage application roller carrying electrical circuitry to connect the conductive surfaces to the voltage source through a roller journal shaft.

US PAT NO: 4,286,411 [IMAGE AVAILABLE]

TITLE: Manual balanced door with door closer arm

L7: 16 of 26

ABSTRACT:

A manually-operable balanced door with improved operating characteristics is mounted to pivot around a guide roller so that a hinge side of the door swings inwardly from a door frame while a latching side of the door swings outwardly from the door frame. A door closer within the header is reversed from its position in a prior construction so that a rotatable closer shaft extends downwardly from a hinge side portion of the door frame header. The check shaft is coupled by a rigid closer arm to the latching side of the door, while the hinge side of the door is supported between upper and lower door pivot arms. A bearing ****assembly**** is disposed within a hinge end of the upper pivot arm and encircles a pivot pin that is supported within a cavity in a side jamb, the pivot pin being easily ****removable**** for disassembling the door from the door frame.

US PAT NO: 4,175,883 [IMAGE AVAILABLE]

TITLE: Composite structural members and fastening methods

L7: 17 of 26

ABSTRACT:

Composite moldings are provided defining structural members such as beams, stakes and poles for use in a variety of applications including the fabrication of fences, frames and other architectural structures wherein a plurality of structural members or planks are secured together by means of the composite moldings. In one form, the composite moldings are formed of ****elongated**** structural core members such as rods, tubes, angles, channels, box-beams or otherwise shaped members, preferably but not necessarily, made of metal which are disposed within a mold after which a cellular plastic material is cast or injection molded thereabout to form a sheathing. The sheathing may be decorated or shaped to represent a wood grained structure and the core member may extend from either or both ends thereof for fastening purposes and to permit the composite molding to be driven into the ground or secured to an anchoring material such as concrete. In another form, the sheathing is especially shaped with one or more cavities therein to permit attachment of other structural devices such as rods, tubes, beams or planks, to the composite molding, to form fences, frames and the like thereof.

US PAT NO: 4,164,964 [IMAGE AVAILABLE]

TITLE: Fluid dispenser for reconstituting

L7: 18 of 26

beverages and the like

ABSTRACT:

A device for reconstituting beverages by injecting fluid such as hot or cold water into a container having a granulated, powder or liquid food or beverage concentrate material therein comprises an electroresponsive valve coupled to a fluid supply, a combination nozzle and punch coupled

to the valve outlet with a flexible tube, electroresponsive means for advancing the punch to penetrate the container and means for supporting the container so there will be an angle between the flow path of the fluid discharged from the nozzle and the axis or walls of the container during filling. Electric control circuitry is provided for timing the valve, punch and nozzle operations and for issuing a measured quantity of fluid to the container. Containers adapted for being easily penetrated by the punch, for sanitary sealing and for being engaged in a self-supporting state during filling are also provided.

US PAT NO: 4,084,819 [IMAGE AVAILABLE]
TITLE: Golf club shaft for irons

L7: 19 of 26

ABSTRACT:

A composite golf shaft for use with a metal golf club head is improved by reinforcing the tubular **metal** **core** of the shaft with a unidirectional graphite fiber reinforced resin body which is inserted in the tip section of the shaft.

US PAT NO: 4,082,277 [IMAGE AVAILABLE]
TITLE: Golf club shaft

L7: 20 of 26

ABSTRACT:

A novel golf shaft having a **metal** **core** and a graphite fiber reinforced sheath thereon is provided. The shaft has a predetermined orientation of the graphite fibers. In one embodiment, some longitudinal fibers are located in the region where the butt section of the shaft begins to taper downwardly thereby lowering the bending profile of the shaft compared with a shaft not having the longitudinal fibers. The method of fabricating the shaft also is disclosed.

US PAT NO: 3,948,010 [IMAGE AVAILABLE]
TITLE: Reinforcing device for an element of prestressed concrete

L7: 21 of 26

ABSTRACT:

The invention relates to the technique of prestressed concrete and concerns a reinforcing device comprising a cylindrical **metal** **tube** at the ends of which are friction welded two plates or flanges defining radial support surfaces for bearing on the concrete. One of these plates constitutes an end wall against which abuts a **metal** **core** for putting the tube under tension. The other plate, which has a centre aperture, comprises means such as screw threading which co-operates with a bolt for achieving said tensioning in an effective and easy manner. Preferably, the tube has a section which varies along its longitudinal axis so as to afford an improved guide for the core and improve the characteristics of the reinforcement. A particularly advantageous application is in the manufacture of composite railway ties.

US PAT NO: 3,910,753 [IMAGE AVAILABLE]
TITLE: Wax burner

L7: 22 of 26

ABSTRACT:

A wax burner comprising an upwardly opening wax carrying vessel, a mass of normally solid flammable wax in the vessel, a heat conducting metal heat sink unit within the vessel and in the wax, an **elongate** vertical, heat conducting wick structure engaged with the heat sink unit and projecting upwardly therefrom, said wick structure having a heat conducting **metal** **core** to conduct heat into said unit, a fibrous

sleeve about the core with an exposed flame supporting upper portion and a lower portion within the unit and a heat conducting metal tub about the sleeve below said exposed portion and in heat conducting contact with said unit to conduct heat from said exposed portion to the unit, said unit having a wax supporting fluid draining heat conducting wax melting rack projecting outwardly into the confines of the vessel in spaced relationship above the bottom thereof.

US PAT NO: 3,893,437 [IMAGE AVAILABLE]
TITLE: Carburetor system

L7: 23 of 26

ABSTRACT:

A carburetor system for an internal combustion engine wherein there is provided a distributor and a carburetor, there being a means operatively connecting the distributor and carburetor together. A means is provided for heating and acting on the fuel air mixture so that the fuel air mixture entering the internal combustion engine will be in the most advantageous form whereby increased mileage of a vehicle will be assured, as well as providing for other advantages, such as reduced pollution and the like.

US PAT NO: 3,844,019 [IMAGE AVAILABLE]
TITLE: SAW AND IMPACT RESISTANT SECURITY BAR AND METHOD OF MAKING SAME

L7: 24 of 26

ABSTRACT:

A lock shackle formed of an **elongated** **metal** **core** having longitudinally extending shallow grooves formed in its surface, and a thin wall tube closely fitted around the core, with the grooves filled with a matrix formed of hard carbide particles and a soft material binder.

US PAT NO: 3,784,782 [IMAGE AVAILABLE]
TITLE: WELDING GUN

L7: 25 of 26

ABSTRACT:

A welding gun for performing shielded arc welding of tubes to tubesheets, and having a rotatable electrode holder **assembly** which delivers both the welding current and the shielding gas to the electrode that travels in a circular path and arcs to the grounded workpiece.

US PAT NO: 3,777,517 [IMAGE AVAILABLE]
TITLE: SAW AND IMPACT RESISTANT LOCK SHACKLE

L7: 26 of 26

ABSTRACT:

A lock shackle formed of an **elongated** **metal** **core** having longitudinally extending shallow grooves formed in its surface, and a thin wall tube closely fitted around the core, with the grooves filled with a matrix formed of hard carbide particles and a soft material binder.